Activity 10-26: **Do You Want to Build a Snowman?** Name:

You may use a calculator for this activity. Do not use the pi button – use 3.14 for pi.
For all problems involving an equation (circumference, area, etc.) show all steps.
For all problems asking "how many turns" your answer should be a whole number.

Fresh snow has just fallen and Ashley decides to make a snowman.
Ashley makes a snowball 6 inches in diameter. She then rolls the snowball one full turn.

1.	Draw a picture of the original snowball and draw and label the diameter.	
2.	How far does Ashley roll the snowball? **Show all equations and all steps in the box at the right.**	
3.	Ashley finds that 3 inches of new snow sticks as she rolls the snowball (3 inches added to every part on the original circle). Draw a picture of the new snowball.	
4.	What is the new diameter of the snowball after Ashley rolls it one full turn? (Hint: It is not 9 inches.)	
5.	How many total turns will Ashley have to make so that the diameter of the snowball becomes 72 inches? (Hint: The first 6 inches did not require any turns.)	
6.	How many total turns will it take for the circumference to become greater than 300 inches? (Hint: Start with the circumference formula to find *d*.) **Show your original equation and all steps in the box at the right.**	

7.	How many total turns will it take for the area to become greater than 1000 in.^{2}? (Hint: Start with the area formula to find *r*.) **Show all equations and all steps in the box at the right.**	

8.	Ashley makes a second snowball and then rolls it one full turn. Again 3 inches of snow stick to it. She measures the new circumference (C) to be about 44 inches. To the nearest inch, what is the diameter of Ashley's rolled snowball? **Show all equations and all steps in the box at the right.**	
9.	Using the diameter from #8, what is the area of the rolled snowball? **Show all equations and all steps in the box at the right.**	
10.	What was the diameter of the snowball before Ashley rolled it?	
11.	What is the area of the snow that stuck to the original snowball in #8? **Show all equations and all steps in the box at the right.**	

12.	Ashley rolls a huge snowball 4 feet in diameter. She decides to make another snowball $\frac{2}{3}$ of its diameter to put on top. In **inches**, what is the diameter of the snowball Ashley wants to put on the top?	
13.	In square inches, what is the area of both snowballs combined? **Show all equations and all steps in the box at the right.**	
14.	Ashley started with a snowball 8 inches in diameter. How many complete turns will Ashley need to roll it before she has a snowball the size she wants to put on top?	